CLAIMS

What is claimed is:

1. A polyether ester elastic fiber comprising a polyether ester elastomer containing polybutylene terephthalate as a hard segment and polyoxyethylene glycol as a soft segment, characterized by having a coefficient of moisture absorption of not less than 5 % at 35℃ and at a RH of 95 % and a coefficient of water absorption extension of not less than 10 %.

2. The polyether ester elastic fiber according to Claim 1, wherein the polyether ester elastomer is copolymerized with a metal organic sulfonate represented by the following general formula (1), and the intrinsic viscosity of the elastic fiber is not less than 0.9.

$$\left[\begin{array}{c} X1-R1-X2 \\ | \\ SO_3 - \end{array} \right]_j M1 \quad \cdots (1)$$

(wherein, R1 represents an aromatic hydrocarbon group or an aliphatic hydrocarbon group, X1 represents an ester-forming functional group, X2 represents an ester-forming functional group identical to or different from X1 or a hydrogen atom, M1 represents an alkali metal or an alkaline earth metal, j represents 1 or 2).

3. The polyether ester elastic fiber according to Claim 2, wherein the shrinkage percentage of the elastic fiber in boiling water is not less than 10 %.

4. The polyether ester elastic fiber according to Claim 2, wherein the metal organic sulfonate is a compound represented by the following general formula (2).

$$HO-CH_2-CH_2-OCO-\underset{\substack{| \\ SO_3-M2}}{R2}-COO-CH_2-CH_2-OH \quad \cdots (2)$$

(wherein, R2 represents an aromatic hydrocarbon group or an aliphatic hydrocarbon group, M2 represents an alkali metal or an alkaline earth metal).

5. The polyether ester elastic fiber according to Claim 2, wherein the copolymerization quantity of the metal organic sulfonate is in a range of

0.1 to 20 percent by mole based on the acid component constituting the polyether ester elastomer.

6. The polyether ester elastic fiber according to Claim 1, wherein the elastic fiber has two crystal-melting peaks in a DSC curved line obtained with a differential scanning calorimeter, has a Hm1 / Hm2 ratio of the height Hm1 of the crystal-melting peak on the lower temperature side / the height Hm2 of the crystal-melting peak on the higher temperature side in a range of 0.6 to 1.2, and has a breaking elongation of not less than 400 %.

7. The polyether ester elastic fiber according to Claim 6, wherein the temperature Tm1 of the crystal-melting peak on the lower temperature side and the temperature Tm2 of the crystal-melting peak on the higher temperature side among the two crystal-melting peaks satisfy the following expression.

$200℃ \leqq Tm1 < Tm2 \leqq 225℃$

8. The polyether ester elastic fiber according to one of Claims 1, 2 and 6, wherein the ratio of the hard segment : the soft segment is in a range of 30 : 70 to 70 : 30 based on weight.

9. The polyether ester elastic fiber according to one of Claims 1, 2 and 6, wherein a finishing oil in which at least one lubricant selected from the group consisting of mineral oils, silicones and aliphatic esters and an ether-based or ester-based nonionic surfactant occupy 70 to 100 percent by weight and 0 to 30 percent by weight, respectively, of said finishing oil is adhered to the surface of the elastic fiber in an amount of 0.5 to 5.0 percent by weight based on the weight of said fiber.

10. The polyether ester elastic fiber according to Claim 9, wherein the viscosity of the finishing oil at 30℃ is 5×10^{-6} to 4×10^{-5} m^2/s.

11. A fabric in whose at least one portion the polyether ester elastic fibers according to one of Claims 1, 2 and 6 are used.

12. Clothing in whose at least one portion the polyether ester elastic fibers according to one of Claims 1, 2 and 6 are used.

13. Underwear, sportswear, lining, pantyhose, or socks in whose at least one portion the polyether ester elastic fibers according to one of Claims 1, 2 and 6 are used.